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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/849,525	05/20/2004	Jean-Christophe Ehrstrom	22130-00039-US	5569

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Womble Carlyle Sandridge & Rice, PLLC  
Attn: Patent Docketing 32nd Floor  
P.O. Box 7037  
Atlanta, GA 30357-0037

EXAMINER
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ABOAGYE, MICHAEL

ART UNIT	PAPER NUMBER
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1725

MAIL DATE	DELIVERY MODE
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07/27/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	Application No. 10/849,525	Applicant(s) EHRSTROM ET AL.	
	Examiner Michael Aboagye	Art Unit 1725	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 14 November 2006.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) 15-18 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 May 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| <p>1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)</p> <p>2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)</p> <p>3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br/>           Paper No(s)/Mail Date <u>10/12/2006</u>.</p> | <p>4) <input type="checkbox"/> Interview Summary (PTO-413)<br/>           Paper No(s)/Mail Date. _____</p> <p>5) <input type="checkbox"/> Notice of Informal Patent Application</p> <p>6) <input type="checkbox"/> Other: _____</p> |
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## DETAILED ACTION

### *Drawings*

1. The application has been filed with informal drawings, which are acceptable for examination purposes only. Formal drawings will be required when the application is allowed.

### ***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over either Litwinski (US Patent No. 6,780,525) in view of Rioja et al. (US Patent No. 4,861,391).

Litwinski teaches a method of forming a structural assembly (22, figure 3) from aluminum alloy parts (24a and 24b), figure 3) by friction stir welding the parts (24a and 24b), thereafter subjecting the structural assembly (22) to precipitation hardened after being formed, without the individual structural members 24 being precipitation hardened; wherein said Precipitation hardening process include a first process being a solution heat treatment and the second process being a precipitation heat treatment

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(Litwinski, abstract and column 6, lines 40-56), and quenching the welded parts.

(Litwinski, column 2, lines 1-10 and column 7, lines 40-45)

Litwinski teaches parts made aluminum or aluminum alloy (see the AA series 2000 and 7000, see Litwinski, column 6, lines 24-30) as claimed by applicant but does not expressly teach the specific melting peak energy nor the burning temperature of the alloy as claimed.

However, Rioja et al. teaches a thermal treatment method to improve the mechanical properties of heat treatable aluminum alloy parts (7000 series alloys, see Rioja et al. column 1, lines 30-33, and column 4, lines 51-62); subjecting the parts to heat treatment; wherein treatment includes two steps, including a first temperature treatment to effect precipitation strengthening and a second temperature for solution treatment (see Rioja et al. column 3, lines 5-30), (note the examiner interprets this to mean subjecting the parts to a heat treatment twice as recited in claim 1, i.e. temperature T for at least  $2t_{\text{sub.1}}$ , wherein  $t_{\text{sub.1}}$  comprises a minimum treatment duration at temperature T). Rioja et al. also teaches obtaining a part or a material "peak strength" after the heat treatment schedule defined by differential scanning calorimetry (DSC) (Rioja et al., column 3, lines 65-67, column 4, lines 20-27 and column 9, lines 6-41). Rioja et al. further teaches wherein the burning temperature of the alloy is less than 500 degree C., and the treatment duration is at least 24 h or at least 48 h (see column 9, lines 22-67) (Note, there is no definition given to the burning temperature in the specification, hence the examiner interprets said burning temperature as the operating temperature at which the aluminum part remains

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unoxidized. Said limitation is met by the Rioja et al., since Rioja et al. discloses for example a temperature of about 163 degrees which is less than the upper bound temperature 500 degrees claimed by applicant).

Rioja et al. teaches wherein at least one of the alloys is a 2024 alloy having a manganese content by weight of less than about 0.3%; wherein at least one alloys comprises a copper-containing alloy of the 7000 series having a chromium content by weight of less than about 0.15%, and a zirconium content by weight of less than about 0.09%; wherein the copper content is at least about 0.5% (column 10, lines 35-54 and column 4, lines 55-59). Rioja et al. teaches the applicability of such heat treatment to homogenize or stress relieving to improve the properties of rolled, extruded, or forged components (Rioja et al., column 5, lines 2-8).

Regarding the specific melting peak energy set forth in the claims, it is noted that Rioja et al. discloses substantially the same process steps at the same temperature range and on the same material (2000 and 7000 series aluminum alloys), hence it is the examiners position that the specific melting energy will be led to by using the DSC analysis.

It would have been obvious to one of ordinary skill in the art to modify the method of Litwinski by using the two step, two period heat treatment process taught by Rioja et al. in order to optimize the strength and the fracture toughness of said aluminum alloy parts (Rioja et al., column 9, lines 36-41).

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4. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over either Litwinski (US Patent No. 6,780,525) in view of Rioja et al. (US Patent No. 4,861,391) as applied to claim 1 above and further in view of Lindner et al. (US Patent No. 6,8430,92).

Litwinski and Rioja et al. fail to teach an inert flushing gas over the welding zone during welding.

However Lindner et al. teaches a friction stir welding method of components made of aluminum alloy, wherein a inert flushing gas over the welding zone during welding ensure that the structure of the processed material remains unchanged (Lindner et al., column 5, lines 60-66).

It would have been obvious to one of ordinary skill in the art to provide an inert flushing gas in the combines process of welding Litwinski and Rioja et al. to shield the welding zone in order to protect the structure of the processed material, in particular oxidation can mitigate against the final properties of the joint (Lindner et al., column 5, lines 60-66).

### ***Response to Arguments***

5. The examiner acknowledges the applicants' amendment received by USPTO on November 14, 2006. Claims 15-18 have been withdrawn, therefore claims 1-14 are currently under consideration in this application remain under consideration in the application.

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6. Applicant's arguments filed October 12, 2006 have been fully considered but they are not persuasive. Regarding the applicant's invention that Litwinski only teaches heat treatment prior to friction stir welding. The Examiner respectfully disagrees. Litwinski specifically teaches an embodiment wherein the parts (24a and 24b) are friction stir welding to form a structural assembly (22), and thereafter subjecting the assembly to precipitation hardened after being formed, without the individual structural members 24 being precipitation hardened (Litwinski, column 6, lines 40-56).

### ***Conclusion***

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.


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8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Aboagye whose telephone number is 571-272-8165. The examiner can normally be reached on Mon - Fri 8:30am - 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jonathan Johnson can be reached on 571-272-1177. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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JONATHAN JOHNSON  
PRIMARY EXAMINER

  
Michael Aboagye  
Assistant Examiner  
Art unit 1725  
07/19/2007